



KEY NUTRITION FOR HEALTHY HIVES



A KICK START

The demands for honey production and crop pollination is increasing, and with this comes an increased risk to the health of bees.

The honey bee requires proteins, carbohydrates, vitamins, fats, and minerals in their diet to survive and thrive. Nutrient deficiencies from increased demand on natural floral resources impacts the bees ability to carry out its individual role in the hive- reducing overall health and productivity.

AgriSea Bee Nutrition provides key nutrition to support healthy hives year round. We supply all 10 essential amino acids and a range of trace elements + minerals bees require to grow and reproduce. 8 other non-essential amino acids offers additional nutrients which stressed hives can no longer self produce.

The complex balance of Vitamins B and C (B2, B3, B5, B9, B12) in AgriSea Bee Nutrition are essential for brood rearing. We also provide carbohydrates which bees require for energy, as well as lipids for hormone development.

AgriSea has a continuing commitment to research and has partnered with New Zealand's highly accredited research institutes to provide beekeepers with product insight. Preliminary trials have shown using AgriSea Bee Nutrition as recommended significantly increased brood productivity in spring and reduced the prevalence of *Nosema sp.* after the winter/ spring season.



SOURCED BY NATURE: ENHANCED BY SCIENCE

Scientifically formulated

AgriSea Bee Nutrition is a scientifically formulated and industry trialled nutritional supplement which supports healthy hives year round. Our product was formulated from our own product development trials, feedback from beekeepers, advice from industry experts, and expertise from scientists. The end result is a combination of proteins, carbohydrates, fats, vitamins, minerals, and trace elements that bees need to survive and thrive. The naturally chelated form of these ingredients enhances their bioavailability to the gut of the bee.

Produced naturally

The natural brewing process of AgriSea Bee Nutrition excludes the use of any chemical, freezing, or dehydration techniques which may denature the seaweeds nutrient balance - maximising the extraction of available ingredients.

Ease of use

AgriSea Bee Nutrition has been designed for beekeepers to easily administer to hives as a liquid which they can mix in with their regular feed regime. No extra steps, no extra time, and a very little amount of product is required to deliver an immediately available source of nutrition to hives.

- ✓ Scientifically Formulated
- ✓ New Zealand Natural
- ✓ No Chemicals, Residues, Or Pesticides
- ✓ GMO Free
- ✓ Organically Certified (Biogro)

Recommended dosage rates:

- For hive maintenance: 20 - 30 ml per L of regular feed
- To build the hive: Can increase to 40 ml per L of regular feed

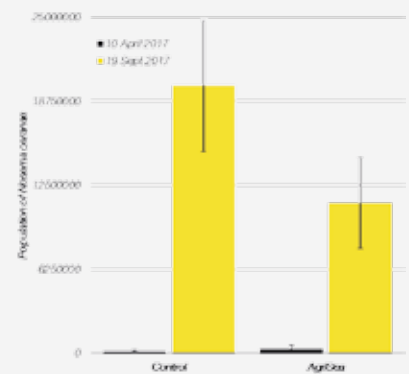
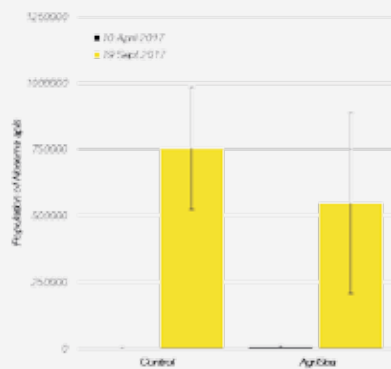
OUR COMMITMENT TO RESEARCH AND INNOVATION

In 2017, AgriSea received a Callaghan Innovation Project grant to partner with New Zealand's highly accredited research institutes and assess how AgriSea Bee Nutrition impacts hive health. Phase 1 of the trial was performed over April - September of 2017 and the findings are reported below.



REDUCTION OF NOSEMA

Key results from the research showed a statistically significant reduction in the prevalence of *Nosema ceranae* from those colonies fed AgriSea Bee Nutrition at 30 ml per L of sugar syrup. A similar but non statistically significant reduction was seen for *Nosema apis*.



NO RESIDUES IN HONEY

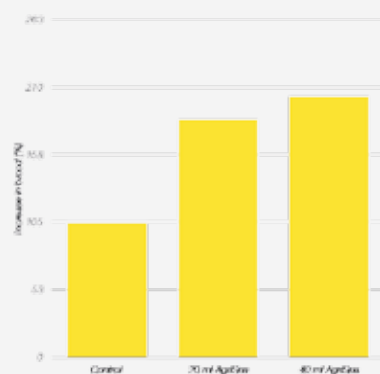
Another key finding was no statistically significant difference in heavy metal residue levels (zinc, cadmium, nickel) in honey produced from colonies fed AgriSea Bee Nutrition at 30 ml per L of sugar syrup. This confirms that our product does not contain any harmful residues which can contaminate honey.

BROOD BOOSTING

In 2016, AgriSea performed a research trial to assess the impact of AgriSea Bee Nutrition on brood production.

Results showed feeding bees AgriSea at 20 ml per L of sugar syrup every two weeks increased brood production 80 % more than those fed sugar syrup alone (185 % in total). Feeding AgriSea at 40 ml per L then increased brood production by an additional 17 % (202 % in total).

The findings confirm using AgriSea at 20 ml per L can effectively increase brood production during the spring build up season. Feeding 40 ml per L did further increase productivity and therefore beekeepers could double the dosage rate over this time if they find it is commercially viable to do so.



AGRISEA BEE NUTRITION PRODUCT ANALYSIS

Minerals and Trace Elements (mg/L - ppm)

Nitrogen	50.35	Phosphorus	10.07	Potassium	2134.84	Sulphur	271.89	Calcium	90.63
Magnesium	211.47	Sodium	1701.83	Iron	0.703	Copper	0.064	Manganese	0.041
Iodine	454.50	Molybdenum	0.01	Selenium	0.01	Zinc	0.360	Boron	6.060
Cobalt	0.010								

Vitamins - Vitamin A, Vitamin C, Vitamin E, Vitamins B1, B2, B3, B5, B12, Fucoxanthin, Choline, Folic Acid

Amino Acid (mg/100gm)

Aspartic Acid	7.17	Threonine	1.72	Serine	1.91	Glutamic Acid	19.19
Prolin	0.90	Glycine	2.62	Alanine	8.64	Valine	1.90
Isoleucine	0.87	Leucine	1.71	Tyrosine	1.41	Phenylalanine	1.31
Lysine	1.85	Histidine	0.68	Arginine	1.50	Cystine	2.05
Methionine	0.47	Tryptophan	0.21				

Cytokins & Auxins - Transzeatin riboside, Isopentenyladenosine, Trans zeatin, Isopentenyladenine, Indole Acetic Acid

Phlorotannins 8-10% g dwt **Mannitol** 3500 µmol g dwt



*Declared values are considered averages and are subject to seasonal variation.

AGRISEA CONTAINS A SOURCE OF:	IMPORTANCE FOR BEE NUTRITION
10 essential amino acids: <i>Threonine, Valine, Methionine, Isoleucine, Leucine, Phenylalanine, Histidine, Lysine, Arginine, Tryptophan</i>	Brood rearing and longevity of the worker bee
8 non-essential amino acids: <i>Aspartic acid, proline, glycine, serine, alanine, tyrosine, glutamic acid, cystine</i>	At times of stress when these can no longer be self produced by the bees
Carbohydrates <i>Mannitol</i>	Secondary energy source
Vitamin B complex: <i>Thiamine (B1), Riboflavin (B2), Panthothenic acid (B5), Cyanocobalamin (B12)</i>	Development of the hypoharyngeal glands and brood rearing
Vitamin C	Brood rearing
Lipids <i>Polyunsaturated Fatty Acids, sterol</i>	Precursor for important hormones, including the molting hormone
Trace elements and minerals: <i>Nitrogen, Magnesium, Iodine, Cobalt, Phosphorus, Sodium, Molybdenum, Potassium, Iron, Selenium, Sulphur, Copper, Zinc, Calcium, Manganese, Boron</i>	Growth, survival, and reproduction



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